

**AMCHITKA ISLAND**  
**SITE SUMMARY, AUG 1991**  
**EPA ID#: AK6210890079**

## **Introduction**

Amchitka Island is located in the Aleutian Islands of Western Alaska approximately 1415 miles southwest of Anchorage. The island remains in the ownership of the Department of the Interior (DOI), administered by the US Fish and Wildlife Service (USFWS) as part of the Alaska Maritime National Wildlife Refuge system. Since 1952 when the island was retransferred to DOI from the Department of Defense (DoD), special use permits have been required for use of portions of the island. Activities that have taken place on the island include, an Air Force weather station, 1952-1954, and Air Force radio relay site, 1956-1961, and for a period of 1965-1973, a test site for underground nuclear tests conducted by the Atomic Energy Commission (AEC) for the DoD. It is currently the site of construction of an experimental radar station by the US Navy. As such, there is a resident population of approximately 160 people in the southern half of the island.

## **Hazard Ranking System (HRS) Scoring**

The submitted information for the Amchitka Island facility was evaluated for adequacy in order to decide if the *Hazard Ranking System* (40 CFR Part 300) could be applied. While reviewing the file for this facility some data gaps and HRS concerns were noted. Included with this summary is a worksheet which identifies information needed to accurately determine the threat posed by hazardous waste site. The highlighted areas of this worksheet represent data which is lacking and must be submitted in order to properly determine the hazard potential of the Amchitka Island facility.

Please submit the information identified in items: 8, 10-14, 16, 19, 22, 27.

HRS concerns include the fact that the island is part of the Alaska Maritime National Wildlife Refuge; within the refuge on Amchitka Island exist several species that are endangered in other areas of the country. These include the bald eagle, the emperor goose, the winter wren, and the peregrine falcon. Also of concern is that the island was the location of three high-yield underground nuclear detonations.

## **Overview**

Results of analysis from sampling at Amchitka Island indicates little toxic or hazardous material (THM) contamination at the site. Halogenated volatile organic and volatile organic contamination were detected at levels below EPA and Alaska Department of Environmental Conservation (ADEC) regulatory guidelines/criteria and do not present a significant toxic hazard. Moderate levels of PCB Arochlor 1260 were detected in three out of six transformers sampled. One of them was removed under the

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Defense Environmental Restoration Program (DERP); two others are part of an active electrical system operated by the USFWS and were omitted from cleanup.

Amchitka Island was the location of three nuclear tests. The first test was conducted on October 29, 1965, as a part of the Vela Uniform program, a DoD project designed to improve the capability to detect, identify, and locate underground nuclear explosions. The second test was conducted on October 2, 1969, as part of a seismic calibration study for larger yield detonations. The third and final test, conducted on November 6, 1971, was an underground test of the warhead of the Spartan antiballistic missile. As a result of the nuclear testing on Amchitka, three underground cavities have been contaminated with radionuclides, as well as some surficial areas. Known releases of radionuclides to the ground water have occurred. Ground water from wells is not utilized on Amchitka as water is derived from surface impoundments and springs. There is also documentable evidence of surface water contamination occurring at the Long Shot site. Surface water intakes do not exist on the 1-mile drainage system from the Long Shot site to the Bering Sea. Subsequent monitoring has detected trace amounts of tritium emanating as soil gas directly above the crater. The concentrations for this gas were measured at a level well below the standards set by the International Commission of Radiological Protection.

Many species of fish of commercial importance and otherwise were collected and analyzed for their radionuclide content. The species that best represented the potential transfer of radionuclides from the sea to man were selected for analysis. Of special interest were seafoods and other organisms that could be eaten by man. Although there are no significant commercial fisheries in the immediate vicinity of Amchitka, radionuclide data were obtained for salmon, ptarmigan, otter, Dolly Varden, halibut and crab. Analysis of the samples indicated no unusual kinds or amounts of radionuclides.

## Conclusions

The presence of radionuclides on Amchitka Island is monitored through yearly visits by EPA monitoring teams. Since no evidence of THM contamination has been found the hazard which could present itself as a threat is the potential release of radionuclides to the surface of Amchitka. If this were to occur then the wildlife and existing flora could act as environmental receptors which could in turn make their way to the human food chain. The remoteness of the island should reduce the possibility of any direct contact threat to humans. The workers currently on the island may be at risk if any release of radionuclides were to occur, the presence of these contaminants should be made known to them.

## References

CERCLA PA of DOE's Nevada Operations Office Nuclear Weapons Testing Area 4/88 Report on Results of Hazardous Waste Sampling & Analysis, August 1987.  
Environmental Assessment, July 1985.

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PRELIMINARY ASSESSMENT (PA)/SITE INSPECTION (SI)  
DATA REQUIREMENTS  
FOR FEDERAL FACILITY DOCKET SITES

1. Supply copies of all sampling data, on-site and off-site, including location map, detection limits (see definitions, pg.5), raw data sheets, QA/QC documents, date(s) sampled, analytical method(s) used, well or boring logs, and sampling technique(s).
2. Locate and identify on a topo map all known or suspected sources (see definitions, pg. 5). Supply all information about source(s) such as; dates of operation, use, and spillage; amounts of material deposited, stored, or spilled; dimensions of source(s); known or suspected hazardous substances (see definitions, pg. 5), etc.
3. Provide a description of all aquifers beneath the site. Include description of overlying materials (i.e., hydraulic conductivity/permeability), thickness, composition, and depth aquifer is first encountered. \*NOTE: This data requirement involves a literature search of all current or existing geologic information.
4. For each source, choose one description from Table 1 (page 6-7) that describes the ground water containment. Provide complete documentation (i.e., engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the table.
5. Provide the location of all drinking water wells in all aquifers within 4-mile radius from site (property boundary) shown on topo map. Provide information on depth of well(s), screening interval(s), depth aquifer(s) encountered, and population served. For multiple wells (i.e., municipal system) provide the number of wells, location of all wells (regardless of 4-mile limit), average annual pumpage of each well (regardless of 4-mile limit), and total population served by system. Include information on all standby wells.
6. Provide information and location (on topo map) of wells within 4 miles that are used:
  - a) to irrigate 5 or more acres of commercial food or forage crops,
  - b) for watering of commercial livestock,
  - c) as an ingredient in commercial food preparation,
  - d) as a supply to aquaculture, or
  - e) as a supply for a major or designated water recreation area, excluding drinking water use.
7. What is the average number of persons per residence (Borough, city, village, community, etc.) that site is located in?

8. Identify and locate all surface water bodies within 2 miles of site. Indicate the drainage routes (shown on topo map) from each source to applicable surface water bodies. Provide the average annual flow (cubic feet per second) for each surface water body within 15 miles downstream (river, stream, etc.) or 15-mile radius (lakes, bays, etc.) from the point of probable entry into surface water. For lakes, provide information on inflow and outflow.

9. For each source, choose one description from Table 2 (page 7-8) that best describes the surface water containment. Provide complete documentation (i.e., engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the table.

10. What is the number of acres in each drainage basin?

11. From Table 3 (page 8), choose the predominant soil group (surface soil) which comprises the largest total area within each drainage area.

12. What is the 2-year, 24-hour rainfall?

13. From Table 4 (page 8), choose the floodplain category for each source (supply Federal Emergency Management Agency or U.S. Army Corps of Engineers floodplain map) and determine if each source meets the criteria from Table 5 (page 9) (engineer's certification).

14. Provide the location (shown on topo map) of all drinking water intakes within 15 miles downstream (rivers, streams, etc.) or 15-mile radius (lakes, bays, etc.). Provide information on population served. For multiple intakes (i.e., municipal system) provide information on the number of intakes, location of all intakes (regardless of 15-mile limit), average annual pumpage of each intake (regardless of 15-mile limit), and total population served by system. Include information on all standby intakes.

15. Provide information and location (on topo map) of intakes within 15 miles downstream (rivers, streams, etc.) or 15-mile radius (lakes, bays, etc.) that are used:

- a) to irrigate 5 or more acres of commercial food or forage crops,
- b) for watering of commercial livestock,
- c) as an ingredient in commercial food preparation,
- d) as a supply for aquaculture, or
- e) as a supply for a major or designated water recreation area, excluding drinking water use.

16. What is the average human food chain production (pounds per year) for each surface water body within 15 miles downstream (rivers, streams, etc.) or 15-mile radius (lakes, bays, etc.)?



17. Identify all sensitive environments (Table 6, page 9) that exist within a 4-mile radius on land, 15 miles downstream (rivers, streams, etc.), or 15-mile radius (lakes, bays, etc.). Provide original documentation (U.S. Fish & Wildlife, Natural Heritage Database, State agencies, National Oceanic and Atmospheric Administration, etc.) and locate each on a topo map. Note that there could be multiple sensitive environments within the appropriate limit.

18. What is the linear frontage (miles) of all wetlands 15 miles downstream (rivers, streams, etc.) or 15-mile radius (lakes, bays, etc.)?

19. What is the location and number of persons residing, working, attending school or day care within 200 feet of each source?

20. Identify all terrestrial sensitive environments (Table 7, page 10) that exist on-site. Provide original documentation (U.S. Fish & Wildlife, Natural Heritage Database, State agencies, National Oceanic and Atmospheric Administration, etc.) and locate each on a topo map. Note that there may be multiple sensitive environments within the site limits/boundaries.

21. For each source, choose one description from Table 8 (page 10) that describes the accessibility of the site. Provide complete documentation (i.e., engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the table.

22. What is the total number of people within the following distance categories?:

- 0 - 1/4 mile
- 1/4 - 1/2 mile
- 1/2 - 1 mile
- 1 - 2 miles
- 2 - 3 miles
- 3 - 4 miles

Use current/available Census data and/or actual house counts. Document how calculated.

23. For each source, choose one description from Table 9 (page 10) that describes the gaseous containment. From Table 10 (page 11), choose the appropriate description of each source type. For each source, choose one description from Table 11 (page 11) that describes the particulate containment. Provide complete documentation (i.e., engineering diagrams, photographs {originals}) as to why the source meets that description and not any other in the table.

24. What is the location and area (in acres) of all wetlands within 4 miles of site?

25. Contact EPA Regional Office immediately if any radionuclides are present or suspected at site and supply all radiological information known to date.

27. Have any removals or remedial actions taken place at site? If yes, then submit ALL information pertaining to action taken.

28. For all of the above information, use primary data sources and supply 2 copies or specify where copies may be obtained.

29. Has any of the above information been previously submitted to the EPA Superfund Program? If yes, please specify the reference (page and paragraph) or provide a copy of the document?

## DEFINITIONS

*Detection Limit (DL):* Lowest amount that can be distinguished from the normal random "noise" of an analytical instrument or method. For this submission, the detection limit used is the method detection limit (MDL), or for real-time instruments, the detection limit of the instrument as used in the field.

*Hazardous Substance:* CERCLA hazardous substances, pollutants, and contaminant as defined in CERCLA sections 101(14) and 101(33).

*Method Detection Limit (MDL):* Lowest concentration of an analyte that a method can detect reliably in either a sample or blank.

*Primary Sources:* Primary sources include geological publications, field observations/measurements, analytical results, and waste manifests. Primary references are the original materials in which the information was given.

*Sample Quantitation Limit (SQL):* Quantity of a substance that can reasonably be quantified given the methods of analysis and sample characteristics that may affect quantification (for example, dilution/concentration).

*Secondary References:* Materials that refer to the original source of information. Such references may include, for example: (1) allegations of buried drums; (2) estimates of the depth of landfills or lagoons; and (3) summaries of analytical results without actual laboratory data. Note that PA and SI reports may contain a large amount of secondary information (e.g., collected from file materials and published reports). Therefore, the actual documents referenced in these reports should be used as the primary references.

*Site:* Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include areas between sources.

*Source:* Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, ground water, surface water, or surface water sediments that have become contaminated by migration, except: in the case of either a ground water plume with no identified source or contaminated surface water sediments with no identified source, the plume may be considered a source.

## Containment for Groundwater

## All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)

Evidence of hazardous substance migration from source area (i.e. source area includes source and any associated containment structures).

No liner

No evidence of hazardous substance migration from source area, a liner, and:

- (a) None of the following present (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) functioning leachate collection and removal system immediately above liner.
- (b) Any one of the three items in (a) present
- (c) Any two of the items in (a) present
- (d) All three items in (a) present plus a functioning ground water monitoring system
- (e) All items in (d) present plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area.

No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, functioning ground water monitoring system, and:

(f) Only one of the following deficiencies present in containment (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained runoff control system and runoff management system, or (3) no or nonmaintained engineered cover.

(g) None of the deficiencies in (f) present

Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present

## Surface Impoundment

Evidence of hazardous substance migration from surface impoundment

No liner

Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained

No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, and:

- (a) Liner
- (b) Liner with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.
- (c) Double liner with functioning leachate collection and removal system between liners, and functioning ground water monitoring system.

No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

## Land Treatment

Evidence of hazardous substance migration from land treatment zone

No functioning, maintained, run-on control and runoff management system

No evidence of hazardous substance migration from land treatment zone and:

- (a) Functioning and maintained run-on control and runoff management system
- (b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.
- (c) Land treatment area maintained in compliance with 40 CFR 264.280

## Containers

All containers buried

Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).

No liner (or no essentially impervious base) under container area

No diking (or no similar structure) surrounding container area

Diking surrounding container area unsound or not regularly inspected and maintained

No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspected and maintained, and:

- (a) Liner (or essentially impervious base) under container area
- (b) Essentially impervious base under container area with liquids collection and removal system
- (c) Containment system includes essentially impervious base, liquids collection system, sufficient contain 10 percent of volume of all containers, and functioning and maintained run-on control; plus functioning ground water monitoring system, and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.
- (d) Free liquids present containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, single liner under container area with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.
- (e) Same as (d) except: double liner under container area with functioning leachate collection and removal system between liners.

Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-off control present

No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquid or solidification of remaining wastes and waste residues).



## Tank

### Below-ground tank

Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).

Tank and ancillary equipment not provided with secondary containment, (e.g., liner under tank area, vault system, double wall).

No diking (or no similar structure) surrounding tank and ancillary equipment

Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained.

No evidence of hazardous substance migration from tank area. tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, and:

(a) Tank and ancillary equipment provided with secondary containment

(b) Tank and ancillary equipment provided with secondary containment with leak detection and collection system.

(c) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area\* @ spilled or leaked hazardous substances and accumulated precipitation removed in timely manner, at least weekly inspection of tank and secondary containment system, all leaking or unfit-for-use tank systems promptly responded to, and functioning ground water monitoring system.

(d) Containment system has sufficient capacity to hold volume of all tanks within tank containment area and to provide adequate freeboard, single liner under that containment area with functioning leachate collection and removal system below liner, and functioning ground water monitoring system.

(e) Same as (d) except double liner under tank containment area with functioning leachate collection and removal system between liners.

Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.

Table 2

## Containment for Surface Water

### All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)

Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures)

No evidence of hazardous substance migration from source areas and:

(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system.

(b) Any one of the two items in (a) present

(c) Any two of the following present. (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner.

(d) All items in (c) present

(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area

No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, and:

(f) Only one of the following deficiencies present in containment: (1) bulk or noncontainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained runon control system and runoff management system. or (3) no or nonmaintained engineered cover.

(g) None of the deficiencies in (f) present

Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present

## Surface Impoundment

Evidence of hazardous substance migration from surface impoundment

Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained

No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, and:

(a) No liner

(b) Liner

(c) Liner with functioning leachate collection and removal system below liner

(d) Double liner with functioning leachate collection and removal system between liners

No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

## Land Treatment

Evidence of hazardous substance migration from land treatment zone

No functioning and maintained run-on control and runoff management system

No evidence of hazardous substance migration from land treatment zone and:

(a) Functioning and maintained run-on control and runoff management system

(b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.

(c) Land treatment area maintained in compliance with 40 CFR 264.280

## Containers

All containers buried

Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).

No diking (or no similar structure) surrounding container area

Diking surrounding container area unsound or not regularly inspected and maintained

No evidence of hazardous substance migration from container area and container area surrounded by sound diking that is regularly inspected and maintained.

No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspected and maintained, and:

(a) Essentially impervious base under container area with liquids collection and removal system;

(b) Containment system includes essentially impervious base, liquids collection system, sufficient capacity to contain 10 percent of volume of all containers, and functioning and maintained run-on control; and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.

(c) Free liquids present containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, and single liner under container area with functioning leachate collection and removal system below liner.

(d) Same as (c) except: double liner under container area with functioning leachate collection and removal system between liners. Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-on control present.

No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).

## Tank

Below-ground tank

Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).

No diking (or no similar structure) surrounding tank and ancillary equipment

Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained

No evidence of hazardous substance migration from tank area and tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained.

No evidence of hazardous substance migration from tank area, tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, and:

(a) Tank and ancillary equipment provided with secondary containment (e.g., liner under tank area, vault system, double-wall) with leak detection and collection system.

(b) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area, spilled or leaked hazardous substances and accumulated precipitation removed in a timely manner, at least weekly inspection of tank and secondary containment system, and all leaking or unfit-for-use tank systems promptly responded to.

(c) Containment system has sufficient capacity to hold total volume of all tanks within the tank containment area and to provide adequate freeboard, and single liner under tank containment area with functioning leachate collection and removal system below liner.

(d) Same as (c) except double liner under tank containment area with functioning leachate collection and removal system between liners.

Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.

Table 3

## Surface Soil Description

Course-textured soils with high infiltration rates (for example, sands, loamy sands)

Medium-textured soils with moderate infiltration rates (for example, sandy loams, loams)

Moderately fine-textured soils with low infiltration rates (for example, silty loams, silts, sandy clay loams)

Fine-textured soils with very low infiltration rates (for example, clays, sandy clays, silty clay loams, clay loams, silty clays); or impermeable surfaces (for example, pavement)

Table 4

## Floodplain Categories

Source floods annually

Source in 10-year floodplain

Source in 100-year floodplain

Source in 500-year floodplain

None of the above

Table 5

Flood Containment

Documentation that containment at the source is designed, constructed, operated, and maintained to prevent a washout of hazardous substances by the flood being evaluated (see floodplain category)

Table 6

Sensitive Environments

Critical habitat<sup>a</sup> for Federal designated endangered or threatened species  
Marine Sanctuary  
National Park  
Designated Federal Wilderness Area  
Areas identified under Coastal Zone Management Act<sup>b</sup>  
Sensitive areas identified under National Estuary Program<sup>c</sup> or Near Coastal Waters Program<sup>d</sup>  
Critical areas identified under the Clean Lakes Program<sup>e</sup>  
National Monument<sup>f</sup>  
National Seashore Recreational Area  
National Lakeshore Recreational Area  
Habitat known to be used by Federal designated or proposed endangered or threatened species  
National Preserve  
National or State Wildlife Refuge  
Unit of Coastal Barrier Resources System  
Coastal Barrier (undeveloped)  
Federal land designated for protection of natural ecosystems  
Administratively Proposed Federal Wilderness Area  
Spawning areas critical<sup>g</sup> for the maintenance of fish/shellfish species within river, lake, or coastal tidal waters  
Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time  
Terrestrial areas utilized for breeding by large or dense aggregations of animals<sup>h</sup>  
National river reach designated as Recreational  
Habitat known to be used by State designated endangered or threatened species  
Habitat known to be used by species under review as to its Federal endangered or threatened status  
Coastal Barrier (partially developed)  
Federal designated Scenic or Wild River  
State land designated for wildlife or game management  
State designated Scenic or Wild River  
State designated Natural Areas  
Particular areas, relatively small in size, important to maintenance of unique biotic communities  
State designated areas for protection or maintenance of aquatic life<sup>i</sup>

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a Critical habitat as defined in 50 CFR 424.02.

b Areas identified in State Coastal Zone Management plans as requiring protection because of ecological value

c National Estuary Program study areas (Subareas within subareas) identified in Comprehensive Conservation and Management Plans as requiring protection because they support critical life stages of key estuarine species (Section 320 of Clean Water Act, as amended).

d Near Coastal Waters as defined in Sections 104(b)(3), 304(1), 319, and 320 of Clean Water Act, as amended.

e Clean Lakes Program critical areas (subareas within lakes, or in some cases entire small lakes) identified by State Clean Lake Plans as critical habitat (Section 314 of Clean Water Act, as amended).

f Use only for air migration pathway.

g Limit to areas described as being used for intense or concentrated spawning by a given species.

h For the air migration pathway, limit to terrestrial vertebrate species. For the surface water migration pathway, limit to terrestrial vertebrate species with aquatic or semiaquatic foraging habits.

i Areas designated under Section 305(a) of Clean Water Act, as amended.

Table 7

Terrestrial sensitive environments

Terrestrial critical habitat<sup>a</sup> for Federal designated endangered or threatened species  
National Park  
Designated Federal Wilderness Area  
National Monument  
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species  
National Preserve (terrestrial)  
National or State Terrestrial Wildlife Refuge  
Federal land designated for protection of natural ecosystems  
Administratively proposed Federal Wilderness Area  
Terrestrial areas utilized for breeding by large or dense aggregations of animals<sup>b</sup>  
Terrestrial habitat known to be used by State designated endangered or threatened species  
Terrestrial habitat known to be used by species under review as to its Federal designated endangered or threatened status  
State lands designated for wildlife or game management  
State designated Natural Areas  
Particular areas, relatively small in size, important to maintenance of unique biotic communities

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a Critical habitat as defined in 50 CFR 42

b Limit to vertebrate species.

Table 8

Area of observed contamination

Designated recreational area  
Regularly used for public recreation (for example, fishing, hiking, softball)  
Accessible and unique recreational area (for example, vacant lots in urban area)  
Moderately accessible (may have some access improvements-for example, gravel road), with some public recreation use  
Slightly accessible (for example, extremely rural area with no road improvement), with some public recreation use  
Accessible, with no public recreation use  
Surrounded by maintained fence or combination of maintained fence and natural barriers  
Physically inaccessible to public, with no evidence of public recreation use

Table 9

Gas containment description

All situations except those specifically listed below  
Evidence of biogas release  
Active fire within source  
Gas collection/treatment system functioning, regularly inspected, maintained, and completely covering source  
Source substantially surrounded by engineering windbreak and no other containment specifically described in this table applies  
Source covered with essentially impermeable, regularly inspected, maintained cover  
Uncontaminated soil cover >3 feet:  
    Source substantially vegetated with little exposed soil  
    Source lightly vegetated with much exposed soil  
    Source substantially devoid of vegetation  
Uncontaminated soil cover  $\geq$  1 foot and  $\leq$  3 feet:  
    Source heavily vegetated with essentially no exposed soil  
    -Cover soil resistant to gas migration<sup>a</sup>  
    -Cover soil type not resistant to gas migration<sup>a</sup> or unknown  
    - Source substantially vegetated with little exposed soil and cover soil type resistant to gas migration<sup>a</sup>  
    - Other  
Uncontaminated soil cover <1 foot:  
    Source heavily vegetated with essentially no exposed soil and cover soil type resistant to gas migration<sup>a</sup>  
    Other  
Totally or partially enclosed within structurally intact building and no other containment specifically described in this table applies  
Source consists solely of intact, sealed containers:  
    - Totally protected from weather by regularly inspected, maintained cover  
    - Other

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a Consider moist fine-grained and saturated coarse-grained soils resistant to gas migration. Consider all other soils nonresistant.



Table 10

Source type

Active fire area  
Burn pit  
Containers or tanks (buried/belowground):

- o Evidence of biogas release
- o No evidence of biogas release..

Containers or tanks, not elsewhere specified  
Contaminated soil (excluding land treatment)  
Landfarm/land treatment  
Landfill:

- Evidence of biogas release
- No evidence of biogas release

Pile:

- Tailings pile
- Scrap metal or junk pile
- Trash pile
- Chemical waste pile
- Other waste piles

Surface impoundments (buried/ backfilled):

- o Evidence of biogas release
- o No evidence of biogas release

Surface impoundment (not buried/backfilled):

- o Dry
- o Other

Other types of sources, not elsewhere specified

Table 11

Particulate containment description

All situations except those specifically listed below  
Source contains only particulate hazardous substances totally covered by liquids  
Source substantially surrounded by engineered windbreak and no other containment specifically described in this table applies  
Source covered with essentially impermeable, regularly inspected, maintained cover  
Uncontaminated soil cover > 3 feet:

- Source substantially vegetated with little or no exposed soil
- Source lightly vegetated with much exposed soil
- Source substantially devoid of vegetation

Uncontaminated soil cover  $\geq 1$  foot and  $\leq 3$  feet:

- Source heavily vegetated with essentially no exposed soil:
  - Cover soil type resistant to gas migration<sup>a</sup>
  - Cover soil type not resistant to gas migration<sup>a</sup> or unknown
- Source substantially vegetated with little exposed soil and cover soil type resistant to gas migration<sup>a</sup>
- Other

Uncontaminated soil cover < 1 foot:

- Source heavily vegetated with essentially no exposed soil and cover soil type resistant to gas migration<sup>a</sup>
- Other

Totally or partially enclosed within structurally intact building and no other containment specifically described in this table applies  
Source consists solely of containers:

- All containers contain only liquids
- All containers intact, sealed, and totally protected from weather by regularly inspected, maintained cover
- All containers intact and sealed
- Other

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a Consider moist fine-grained and saturated coarse-grained soils resistant to gas migration, Consider all other soils nonresistant.